

Work Order ID 138492

Wednesday, October 28, 2015 12:58:33 PM

138492

Page 1

Item ID: D206-667-247TRN Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Crosstube Assembly, Mid Aft
 Start Date: 10/28/2015 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 10/28/2015 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: MCS Date: OCT 28 2015 Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D206-667-247	A								

100
100 MORI SEIKI CNC LATHE LARGE 0.01
 Mori Seiki Memo 0.02
 Mori Seiki CNC Lathe Large
 1-Fill tube with sand & install plugs DTxxxx on both ends as per Folio FB030
 2-Turn first side as per Folio FB030
 3-File down transition lines smooth.
 FOLIO REV: AA
 DWG REV: AA

1 Ø
 mm
 16/02/18

110
110 QC1- Inspection performed by CMM 0.00
 QC Memo 0.00
 Quality Control
 06/01/18

1 Ø
 mm
 16/02/18

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138492

Page 2

Item ID: D206-667-247TRN Accept ***N900040100*** Setup Start ***NS1***
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Item Name: Crosstube Assembly, Mid Aft
Start Date: 10/28/2015 Start Qty: 1.00 ***1*** Cust Item ID:
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	MORI SEIKI CNC LATHE LARGE	0.00							
120		0.02				1	0		
Mori Seiki	Memo								
Mori Seiki CNC Lathe Large	1-Turn second side as per Folio FB030 2-File down transition lines smooth. 3-Remove sand and plugs FOLIO REV: <u>A</u> DWG REV: <u>A</u>								mmul 16/02/18
130	QC1- Inspection performed by CMM	0.00							
130		0.00				1	0		
QC	Memo								
Quality Control	8/6/01/19								mar l 16/02/18
140	QC8- Inspect parts - second check	0.00							
140		0.00				1	0		
QC	Memo								
Quality Control									DAS 47 9-89 16-02-24

Work Order ID 138492***138492***

Page 3

Wednesday, October 28, 2015 12:58:33 PM

Item ID: D206-667-247TRN

Accept

N900040100Setup Start ***NS1***

Revision ID:

Item Name: Crosstube Assembly, Mid Aft

Stop ***NS2***

Start Date: 10/28/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/28/2015 Req'd Qty: 1.00

1

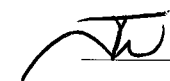
Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
145		0.00							
145									
Crosstubes	Memo	0.01							
Crosstubes	GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.								
150		0.00							
150									
HandFXtube	Memo	0.01							
Hand Finishing Crosstubes	1- PRESSURE WASH X-TUBE INSIDE AND OUT								
	2- ALODINE AND ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE								
160	QC7-Inspect Chemical Conversion Coat	0.00							
160									
QC	Memo	0.00							
Quality Control									

 16-02-24

BL 16/02/25

1 16-02-26

Work Order ID 138492

Wednesday, October 28, 2015 12:58:33 PM

138492

Page 4

Item ID: D206-667-247TRN

Accept

N900040100

Setup Start

NS1

Revision ID:

Item Name: Crosstube Assembly, Mid Aft

Stop

NS2

Start Date: 10/28/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/28/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

NR1

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170		0.00							
170	Packaging					BL		140226	
Packaging	Memo	0.00							
Packaging	LOCATION : LG014								
180									
	QC21- Final Inspection - Work Order Release	0.00							
180									
QC	Memo	0.00				MLJ			
Quality Control									

FEB 29 2016

FEB 29 2016

Picklist Print

Wednesday, October 28, 2015 12:58:38 PM

Page 1

Work Order ID: 138492

138492

Parent Item: D206-667-247TRN

D206-667-247TRN

Parent Item Name: Crosstube Assembly, Mid Aft

Start Date: 10/28/2015

Required Date: 10/28/2015

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP rev:A 11.01.06 new issue DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6004-115		Manufactured	No			100	Each	103.0000	1	1			

D6004-115

Crosstube Material

Location

Loc Qty

Loc Code

LG	14	
107870	14	
LG003	89	
107869	39	
116116	41	
75636	9	

1 - manual 16/02/17

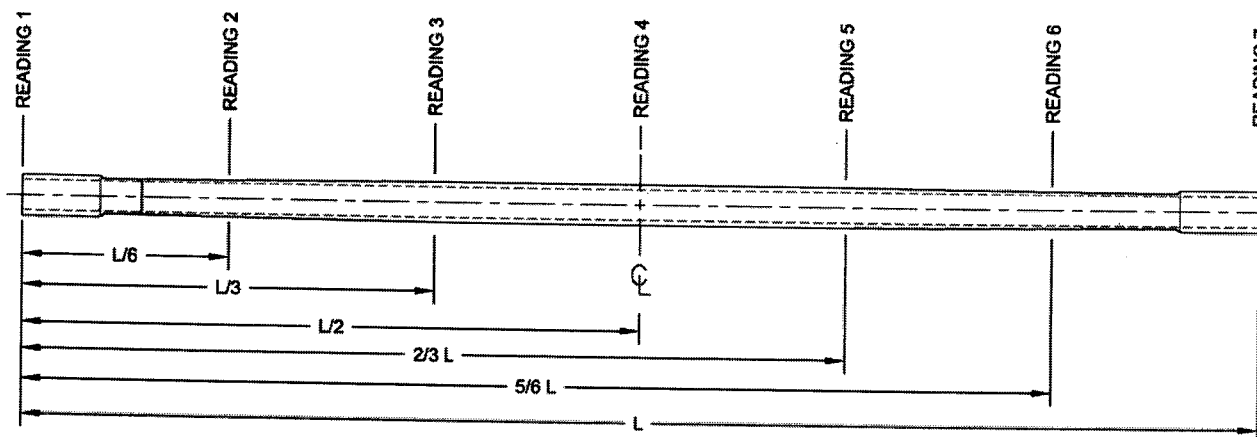
DART AEROSPACE LTD		Work Order:	138492
Description: Crosstube Assembly, Mid Aft		Part Number:	D206-667-247
Inspection Dwg: D206-667-247 Rev: A		Page 1 of 2	

FIRST ARTICLE INSPECTION CHECKLIST

Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.490	+0.005/-0.000	2.495	/		vern	CNC-08
	2.025	+0.005/-0.000	2.029	/			
	2.079	+0.005/-0.000	2.083	/			
	2.145	+0.005/-0.000	2.150	/			
	2.209	+0.005/-0.000	2.214	/			
	2.287	+0.005/-0.000	2.290	/			
	2.363	+0.005/-0.000	2.365	/			
	0.200	+/-0.010	.200	/		vern	CNC-08
	R0.063	+/-0.010	.063	/		RG	
	R2.00	+/-0.010	2.00	/		"	
	R0.063	+/-0.010	.063	/		"	
	4.438	+/-0.010	4.440	/		vern	CNC-08
SIDE B	2.490	+0.005/-0.000	2.495	/		vern	CNC-08
	2.025	+0.005/-0.000	2.027	/			
	2.079	+0.005/-0.000	2.083	/			
	2.145	+0.005/-0.000	2.149	/			
	2.209	+0.005/-0.000	2.213	/			
	2.287	+0.005/-0.000	2.290	/			
	2.363	+0.005/-0.000	2.363	/			
	0.200	+/-0.010	.200	/		vern	CNC-08
	R0.063	+/-0.010	.063	/		RG	
	R2.00	+/-0.010	2.00	/		"	
	R0.063	+/-0.010	.063	/		"	
	4.438	+/-0.010	4.440	/		vern	CNC-08
	99.76	+/-0.020	99.76	/		tape	

DART AEROSPACE LTD	Work Order:	138492
Description: Crosstube Assembly, Mid Aft	Part Number:	D206-667-247
Inspection Dwg: D206-667-247 Rev: A		Page 2 of 2

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.363	.353	.350	.350	.013	0.045"
READING 2 L= 17	.210	.193	.183	.192	.027	
READING 3 L= 33	.345	.331	.327	.329	.018	
READING 4 L= 50	.360	.353	.345	.352	.015	
READING 5 L= 67	.336	.330	.333	.326	.010	
READING 6 L= 83	.200	.195	.193	.197	.007	
READING 7 L= 99	.354	.351	.351	.352	.003	

Calibration Result

Actual Block Thickness: .103 - .150

Sitescan 250 Measured Thickness: .100 - .150

DAS
47

Measured by:	mmv
Date:	16/02/18

Audited by:	9-89
Date:	16-02-24

Preliminary Approval:	
Date:	

Rev	Date	Change	Revised by	Approved
A	11.06.21	New Issue	KJ	
B	12.02.02	Dimension 4.438 was 4.500	KJ	
C	12.06.01	Wall thickness form added	KJ	

Item	Qty	Part Number	Description
	-247		
1	X	D206-667-247	CROSSTUBE ASSEMBLY (206L MID AFT)
2	1	D6004-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2892-1	SUPPORT
6	4	D3595-063-450	RUBBER CUSHION
7	4	MS21920-22	CLAMP
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6004-115
FINISHED LENGTH = 99.76±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-247" AND BATCH NUMBER ON
INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS).
- 7) WEIGHT: 21.1 lbs (-607 = 17.7 lbs)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI
015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-22 CLAMPS WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE
D2892-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE
LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENCLOSING
UNCOMPLETED COPY
SUBJECT TO AGREEMENT
WORK ORDER
NO. 138492 MJS

1570-28

DEO ATTACHED

BCW #11-615

11.07.28

UNDER REVIEW

RELEASED
2011-05-24

A	NEW ISSUE	CP	10.12.23
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	10.12.23		

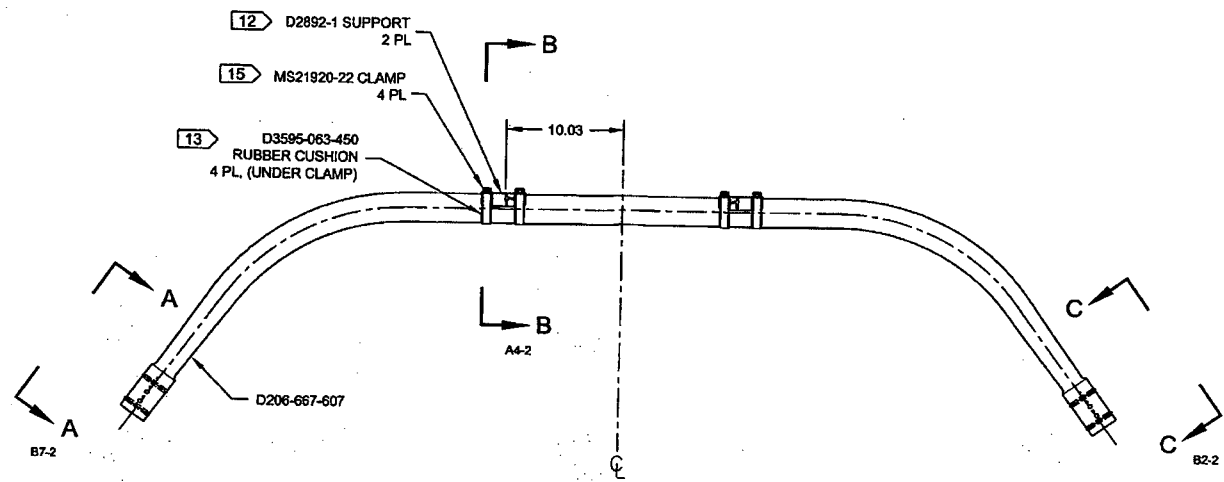
DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. D206-667-247
SHEET 1 OF 4

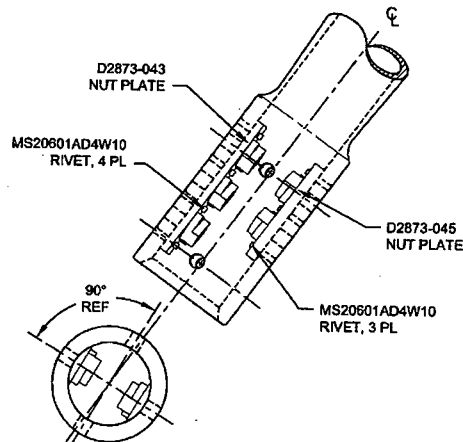
TITLE: CROSSTUBE ASS'Y (206L MID AFT)
SCALE: NTS

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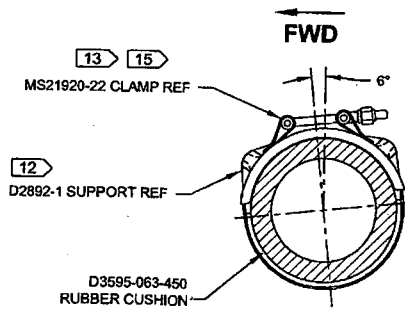
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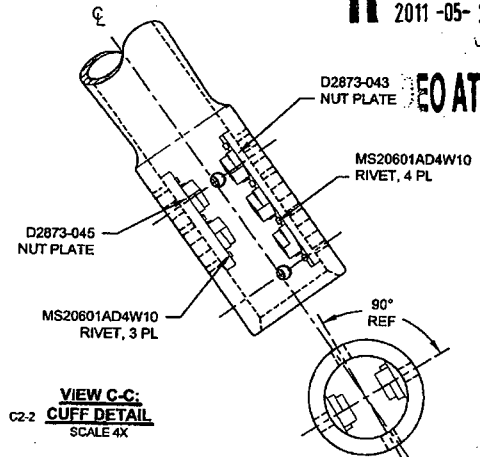
D206-667-247
ASSEMBLY DETAIL
(VIEW LOOKING FWD)



VIEW A-A:
CUFF DETAIL
SCALE 4X



SECTION B-B
SCALE 5X



VIEW C-C:
CUFF DETAIL
SCALE 4X

6011-615
11.07.28
UNDER REVIEW
12.06.13

RELEASED
2011-05-24
EO ATTACHED

DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D206-667-247	SHEET 2 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASS'Y (206L MID AFT)	NTS
DATE	10.12.23	COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR DISCLOSED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

8 7 6 5 4 3 2 1

UNDER REVIEW

DEO ATTACHED

RELEASED
2011-05-24

D206-667-607
BENDING AND DRILLING DETAIL
(VIEW LOOKING FWD)

DETAIL D
SCALE 4X
(VIEW LOOKING FWD)

DETAIL H
SCALE 4X
(VIEW LOOKING FWD)

VIEW E-E:
CUFF DETAIL
SCALE 4X

VIEW F-F
(VIEW LOOKING AFT, ROTATED)

VIEW J-J
(VIEW LOOKING AFT, ROTATED)

VIEW K-K:
CUFF DETAIL
SCALE 4X

SECTION G-G
SCALE 5X

DESIGN		DART AEROSPACE LTD
DRAWN		HAWKESBURY, ONTARIO, CANADA
CHECKED		DRAWING NO.
MFG. APPR.		D206-667-247
APPROVED		REV. A
DE APPR.		SHEET 3 OF 4
DATE	10.12.23	TITLE
		CROSSTUBE ASS'Y (206L MID AFT)
		SCALE
		NTS

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SEE DETAIL L
B7-4

R100.0 TRANSITION
BETWEEN TAPERED
SECTIONS

R100.0 TRANSITION
BETWEEN TAPERED
SECTIONS

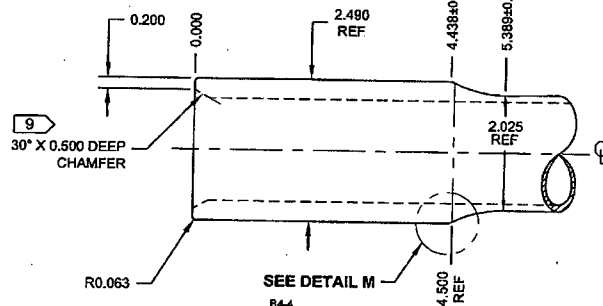
TAPER UNIFORMLY FROM
2.363 REF THROUGH TO 2.522 REF
RUNNING OFF PART

SEE DETAIL N
B2-4

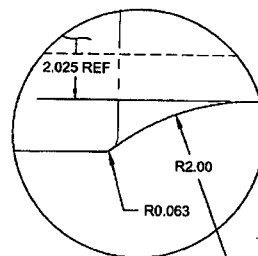
2.500 STOCK
REF

49.880 REF

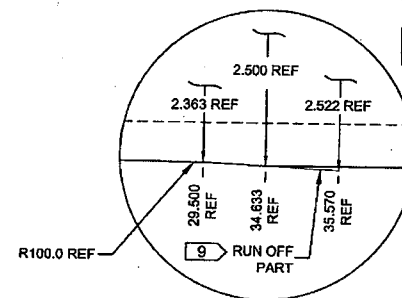
TURNING DETAIL



C7-4 **DETAIL L: CROSSTUBE CUFF**
SCALE 2.5X



B6-4 **DETAIL M:
CUFF TRANSITION**
NOT TO SCALE



C4-4 **DETAIL N:
TAPER RUN-OFF**
NOT TO SCALE

BCN #11-615
11.07.28
UNDER REVIEW
11.06.13

DEO ATTACHED

RELEASED
2011-05-24

DESIGN	99	DART AEROSPACE LTD	
DRAWN	99	HAWKESBURY, ONTARIO, CANADA	
CHECKED	99	DRAWING NO.	REV. A
MFG. APPR.	99	D206-667-247	SHEET 4 OF 4
APPROVED	99	TITLE	SCALE
DE APPR.	99	CROSSTUBE ASS'Y (206L MID AFT)	NTS
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DRAWING NO. D206-667-247	TITLE CROSSTUBE ASS'Y (206L MID AFT)	REV. A	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-247-A-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>qp</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>KD</i>	APPROVED <i>WMD</i>		DE APPR. <i>#</i>		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21		DATE 11.07.21		

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

Item	Qty -247	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
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NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2892-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
WMD